UNITED STATES PATENT AND TRADEMARK OFFICE

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10/003,016	11/14/2001	Marcello Lioy	010430	3299

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EXAMINER
NEURAUTER, GEORGE C

ART UNIT	· PAPER NUMBER
2143	

DATE MAILED: 01/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

<table>
<tr><td rowspan="2">Office Action Summary</td><td>Applicati n No.

10/003,016</td><td>Applicant(s)

LIOY, MARCELLO</td></tr>
<tr><td>Examiner

George C. Neurauter, Jr.</td><td>Art Unit

2143</td><td></td></tr>
</table>

-- The MAILING DATE f this communicati n appears on the cover sheet with the c rrespondence address --

Period f r Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>14 November 2001</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
    closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-30</u> is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-30</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
       application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date <u>08192003</u>.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claims 1-30 are currently pending and have been examined.

Claim Interpretation

1.   The element "network element" defined on page 8, paragraph 0029 of the specification and recited in claims 1-30 will be given its broadest reasonable interpretation and will be interpreted by the Examiner as a network element that transfers information from one network to another that is consistent with the disclosures of the specification and the interpretation that those skilled in the art would reach. See MPEP § 2111.

2.   Claims 19-27 recite the limitation "network element" and its functional limitations. A claim limitation will be interpreted to invoke 35 U.S.C. 112, sixth paragraph if it meets the following 3-prong analysis:

(A) the claim limitations must use the phrase "means for" or "step for";

(B) the "means for" or "step for" must be modified by functional language; and

(C) the phrase "means for" or "step for" must not be modified by sufficient structure, material or acts for achieving the specified function.

With respect to the first prong of this analysis, a claim element that does not include the phrase "means for" or "step

for" will not be considered to invoke 35 U.S.C. 112, sixth

paragraph. If an applicant wishes to have the claim limitation

treated under 35 U.S.C. 112, sixth paragraph, applicant must

either: (A) amend the claim to include the phrase "means for" or

"step for" in accordance with these guidelines; or (B) show that

even though the phrase "means for" or "step for" is not used,

the claim limitation is written as a function to be performed

and does not recite sufficient structure, material, or acts

which would preclude application of 35 U.S.C. 112, sixth

paragraph. See *Watts v. XL Systems, Inc.*, 232 F.3d 877, 56

USPQ2d 1836 (Fed. Cir. 2000)

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35

U.S.C. 112:

> The specification shall contain a written description of the invention, and
> of the manner and process of making and using it, in such full, clear,
> concise, and exact terms as to enable any person skilled in the art to
> which it pertains, or with which it is most nearly connected, to make and
> use the same and shall set forth the best mode contemplated by the inventor
> of carrying out his invention.

Claims 10-13 and 25-27 are rejected under 35 U.S.C. 112,

first paragraph, as failing to comply with the enablement

requirement. The claim(s) contains subject matter which was not

described in the specification in such a way as to enable one

skilled in the art to which it pertains, or with which it is

most nearly connected, to make and/or use the invention.

Claims 10-13 and 25-27 recite the limitation "network

element". According to the specification, the "network element"

comprises a plurality of embodiments including supporting the

IPv6 protocol wherein the network element natively supports only

the IPv4 protocol (paragraphs 0057-0063).

The specification discloses:

"...a PDSN [the "network element" in accordance with

paragraph 0024] [which] natively supports only IPv4...[t]he PDSN

may unframe and apply header compression and decompression

algorithms to such IPv6 packets". (paragraph 0057)

It has not been sufficiently described within the

specification to enable one skilled in the art to make a network

element which natively only supports the IPv4 protocol to allow

the network element to be able to handle any functionality with

respect to the IPv6 protocol.

Also, the specification further discloses an embodiment of

the network element wherein the network element supports the

IPv4 protocol wherein the network element natively supports only

the IPv6 protocol (paragraphs 0030-0056).

The specification discloses:

"...a PDSN [the "network element" in accordance with

paragraph 0024] [which] natively supports only IPv6...[t]he PDSN

may unframe and apply header compression and decompression

algorithms to such IPv4 packets". (paragraph 0030)

It has not been sufficiently described within the

specification to enable one skilled in the art to make a network

element which natively only supports the IPv6 protocol to allow

the network element to be able to handle any functionality with

respect to the IPv4 protocol.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs

of 35 U.S.C. 102 that form the basis for the rejections under

this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or
> a foreign country or in public use or on sale in this country, more than one
> year prior to the date of application for patent in the United States.

Claims 1-5, 9-10, 12-23, and 25-30 are rejected under 35

U.S.C. 102(b) as being anticipated by "Request for Comments

2893: Transition Mechanisms for IPv6 Hosts and Routers" ("RFC

2893").

Regarding claim 1, "RFC 2893" discloses a method of

supporting a network layer protocol in a network element of a

wireless communication network, comprising:

receiving, by the network element (referred to throughout

the reference as "router"), a first packet of a receive packet

stream; (page 16, section 3.6 "Decapsulation", paragraph

beginning "When an IPv6/IPv4 host or router...", specifically

the text "When an IPv6/IPv4 host or router receives an IPv4

datagram...")

ascertaining whether the first packet conforms to a first

predetermined network layer protocol; (page 16, section 3.6

"Decapsulation", paragraph beginning "When an IPv6/IPv4 host or

router...", specifically the text "...the value of the protocol

field is 41...") and

forwarding, at least in part in response to ascertaining

that the first packet conforms to the first predetermined

protocol, at least a portion of the first packet to a router,

the router being configured to support the first predetermined

protocol. (page 10, section 3 "Common Tunneling Mechanisms",

paragraph beginning "Tunneling techniques are usually classified

according...", specifically the text "The endpoint of this type

of tunnel is an intermediary router which must decapsulate the

IPv6 packet and forward it on to its final destination"; page

17, section 3.6 "Decapsulation", paragraph beginning "After the

IPv6 packet is decapsulated...", specifically the text "After

the IPv6 packet is decapsulated, it is processed almost the same

as any received IPv6 packet")

Regarding claim 2, "RFC 2893" discloses the method of claim 1, wherein the ascertaining involves examining a protocol identifier ("protocol field"; page 15, section 3.5 "IPv4 Header Construction", specifically "Protocol") encapsulated within the first packet, the protocol identifier uniquely identifying a protocol to which the first packet conforms. (page 16, section 3.6 "Decapsulation", paragraph beginning "When an IPv6/IPv4 host or router...", specifically the text "...the value of the protocol field is 41...")

Regarding claim 3, "RFC 2893" discloses the method of claim 1, wherein the entire first packet is forwarded to the router. (page 10, section 3 "Common Tunneling Mechanisms", paragraph beginning "Tunneling techniques are usually classified according...", specifically the text "The endpoint of this type of tunnel is an intermediary router which must decapsulate the IPv6 packet and forward it on to its final destination")

Regarding claim 4, "RFC 2893" discloses the method of claim 1, wherein less than the entire first packet is forwarded to the router ("fragmentation"). (page 12, section 3.2 "Tunnel MTU and Fragmentation", paragraph beginning "Note that this does not completely eliminate...", specifically the sentence "In this case...")

Regarding claim 5, "RFC 2893" discloses the method of claim 1, further comprising processing the first packet after the ascertaining and before the forwarding. (page 9, section 3 "Common Tunneling Techniques", "Host-to-Router"; page 10, section 3 "Common Tunneling Mechanisms", paragraph beginning "Tunneling techniques are usually classified according...", specifically the text "The endpoint of this type of tunnel is an intermediary router which must decapsulate the IPv6 packet and forward it on to its final destination"; page 17, section 3.6 "Decapsulation", paragraph beginning "After the IPv6 packet is decapsulated...", specifically the text "After the IPv6 packet is decapsulated, it is processed almost the same as any received IPv6 packet")

Regarding claim 9, "RFC 2893" discloses the method of claim 1, wherein the receive packet stream comprises a Point to-Point Protocol (PPP) stream. (page 9, section 3 "Common Tunneling Mechanisms", "Host-to-Router", specifically the text "IPv6/IPv4 hosts can tunnel IPv6 packets to an intermediary IPv6/IPv4 router..."; page 16, section 3.6 "Decapsulation", paragraph beginning "When an IPv6/IPv4 host or router...", specifically the text "When an IPv6/IPv4 host or router receives an IPv4 datagram...")

Regarding claim 10, "RFC 2893" discloses the method of claim 1, wherein the network element includes substantially no native support for the first predetermined protocol. (page 3, section 1.1 "Terminology", "IPv4-only node")

Regarding claim 12, "RFC 2893" discloses the method of claim 1, wherein the network element is configured to natively support a second predetermined protocol. (page 3, section 1.1 "Terminology", "IPv4-only node")

Regarding claim 13, "RFC 2893" discloses the method of claim 12, wherein the second predetermined protocol comprises one of Internet Protocol, Version 4 (IPv4) and Internet Protocol, Version 6 (IPv6). (page 3, section 1.1 "Terminology", "IPv4-only node")

Regarding claim 14, "RFC 2893" discloses the method of claim 1, wherein the network element comprises a packet data serving node (PDSN). ("router")

Regarding claim 15, "RFC 2893" discloses the method of claim 1, wherein the receive packet stream originates at a terminal device, the terminal device comprising one of a mobile station and a personal computer (PC) ("host"). (page 9, section 3 "Common Tunneling Mechanisms", "Host-to-Router")

Regarding claim 16, "RFC 2893" discloses the method of claim 1, further comprising:

receiving, by the network element, a second packet

forwarded by the router, ascertaining whether the second packet

conforms to the first predetermined network layer protocol;

(page 16, section 3.6 "Decapsulation", paragraph beginning "When

an IPv6/IPv4 host or router...", specifically the text "When an

IPv6/IPv4 host or router receives an IPv4 datagram...") and

transmitting, in response to ascertaining that the second

packet conforms to the first predetermined protocol, at least a

portion of the second packet in a transmit packet stream. (page

10, section 3 "Common Tunneling Mechanisms", paragraph beginning

"Tunneling techniques are usually classified according...",

specifically the text "The endpoint of this type of tunnel is an

intermediary router which must decapsulate the IPv6 packet and

forward it on to its final destination"; page 17, section 3.6

"Decapsulation", paragraph beginning "After the IPv6 packet is

decapsulated...", specifically the text "After the IPv6 packet

is decapsulated, it is processed almost the same as any received

IPv6 packet")

Regarding claim 17, "RFC 2893" discloses the method of

claim 16, wherein ascertaining whether the second packet

conforms to the first predetermined network layer protocol

involves routing the received second packet to a corresponding

instance in the network element. (page 16, section 3.6

"Decapsulation", paragraph beginning "When an IPv6/IPv4 host or router...", specifically the text "...submits the IPv6 datagram to its IPv6 layer code")

Regarding claim 18, "RFC 2893" discloses the method of claim 16, wherein the transmit packet stream is broadcast to a terminal device, the terminal device comprising one of a mobile station and a personal computer (PC) ("host"). (page 9, section 3 "Common Tunneling Mechanisms", "Router-to-Host")

Claims 19-20 and 22 are rejected since these claims recite a network element that contains substantially the same limitations as recited in claims 1, 5, and 16 respectively.

Regarding claim 23, "RFC 2893" discloses the network element of claim 22, further comprising a second processing mechanism operatively coupled to the second receiver and the multiplexer, the second processing mechanism being configured to process the second packet after the receiving by the second receiver and before the ascertaining by the multiplexer. (page 9, section 3 "Common Tunneling Techniques", "Router-to-Host"; page 17, section 3.6 "Decapsulation", paragraph beginning "After the IPv6 packet is decapsulated...", specifically the text "After the IPv6 packet is decapsulated, it is processed almost the same as any received IPv6 packet")

Claims 25-27 are rejected since these claims recite a
network element that contains substantially the same limitations
as recited in claims 10, 12, and 13 respectively.

Claims 28-30 are rejected since these claims recite a
network element that contains substantially the same limitations
as recited in claims 1, 2, and 16 respectively.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which
forms the basis for all obviousness rejections set forth in this
Office action:

> (a) A patent may not be obtained though the invention is not identically
> disclosed or described as set forth in section 102 of this title, if the
> differences between the subject matter sought to be patented and the prior
> art are such that the subject matter as a whole would have been obvious at
> the time the invention was made to a person having ordinary skill in the
> art to which said subject matter pertains. Patentability shall not be
> negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere
Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for
establishing a background for determining obviousness under 35
U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and
   the claims at issue.
3. Resolving the level of ordinary skill in the pertinent
   art.
4. Considering objective evidence present in the
   application indicating obviousness or nonobviousness.

Claims 6-8, 11, and 24 are rejected under 35 U.S.C. 103(a)

as being unpatentable over "RFC 2893" in view of "Request for

Comments 2507: IP Header Compression" ("RFC 2507").

Regarding claim 6, "RFC 2893" discloses the method of claim

5.

"RFC 2893" does not expressly disclose wherein the

processing includes applying a decompression process to the

first packet, however, "RFC 2893" does disclose wherein the

first packet is processed as is known in the art with regards to

the first predetermined network layer protocol (page 17, section

3.6 "Decapsulation", paragraph beginning "After the IPv6 packet

is decapsulated...", specifically the text "After the IPv6

packet is decapsulated, it is processed almost the same as any

received IPv6 packet").

"RFC 2507" discloses wherein a decompression process is

applied to a packet that conforms to the first predetermined

network layer protocol at a network element (pages 4 and 5,

section 1 "Introduction", the paragraph beginning "Headers that

can be compressed include...", specifically the text "Headers

that can be compressed includes TCP, UDP, IPv4, and IPv6 base

and extension headers" and the paragraph beginning "This header

compression scheme...", specifically the text "This header

compression scheme is useful on first-hop or last-hop links as

well as links in the middle of the network."; pages 14-16,

section 4 "Grouping packets into packet streams", specifically

page 15, the paragraph beginning "As long as the rules for when

to...").

It would have been obvious to one of ordinary skill in the

art at the time the invention was made to combine the teachings

of these references since "RFC 2507" discloses that applying a

decompression process to a packet allows improved response time,

reducing header overhead, and reducing packet loss rates over

lossy links (pages 3 and 4, section 1 "Introduction"). In view

of these specific advantages and that both references are

directed to the processing of packet streams conforming to a

specific network layer protocol, one of ordinary skill would

have been motivated to combine these references and would have

considered them to be analogous to one another based on their

related fields of endeavor.

Regarding claim 7, "RFC 2893" and "RFC 2507" disclose the

method of claim 6.

"RFC 2893" does not expressly disclose wherein the

decompression process is applied in accordance with an Internet

Protocol version 4 (IPv4) Van Jacobson decompression process,

however, "RFC 2893" does disclose wherein the first packet is

processed as is known in the art with regards to the first

predetermined network layer protocol (page 17, section 3.6

"Decapsulation", paragraph beginning "After the IPv6 packet is

decapsulated...", specifically the text "After the IPv6 packet

is decapsulated, it is processed almost the same as any received

IPv6 packet").

"RFC 2507" discloses wherein the decompression process is

applied in accordance with an Internet Protocol version 4 (IPv4)

Van Jacobson decompression process (page 4, section 1

"Introduction", the paragraph beginning "Headers that can be

compressed include...", specifically the text "Headers that can

be compressed includes TCP, UDP, IPv4, and IPv6 base and

extension headers. For TCP packets, the mechanisms of Van

Jacobson [RFC-1144] are used...").

Claim 7 is rejected since the motivations regarding the

obviousness of claim 6 also apply to claim 7.

Regarding claim 8, "RFC 2893" and "RFC 2507" disclose the

method of claim 6.

"RFC 2893" does not disclose wherein the decompression

process is applied in accordance with an Internet Protocol

version 6 (IPv6) decompression process, however, "RFC 2893" does

disclose wherein the first packet is processed as is known in

the art with regards to the first predetermined network layer

protocol (page 17, section 3.6 "Decapsulation", paragraph

beginning "After the IPv6 packet is decapsulated...",
specifically the text "After the IPv6 packet is decapsulated, it
is processed almost the same as any received IPv6 packet").

"RFC 2507" discloses wherein the decompression process is
applied in accordance with an Internet Protocol version 6 (IPv6)
decompression process (page 4, section 1 "Introduction", the
paragraph beginning "Headers that can be compressed include...",
specifically the text "Headers that can be compressed includes
TCP, UDP, IPv4, and IPv6 base and extension headers")

Claim 8 is rejected since the motivations regarding the
obviousness of claim 6 also apply to claim 8.

Regarding claim 11, "RFC 2893" discloses the method of
claim 1.

"RFC 2893" does not expressly disclose wherein the network
element includes one of compression support and decompression
support for the first predetermined protocol, however, "RFC 2893
does disclose wherein the first packet is processed as is known
in the art with regards to the first predetermined network layer
protocol (page 17, section 3.6 "Decapsulation", paragraph
beginning "After the IPv6 packet is decapsulated...",
specifically the text "After the IPv6 packet is decapsulated, it
is processed almost the same as any received IPv6 packet").

"RFC 2507" discloses wherein the network element includes

one of compression support and decompression support for the

first predetermined protocol (page 4, section 1 "Introduction",

the paragraph beginning "Headers that can be compressed

include...", specifically the text "Headers that can be

compressed includes TCP, UDP, IPv4, and IPv6 base and extension

headers").

Claim 11 is rejected since the motivations regarding the

obviousness of claim 6 also apply to claim 11.

Regarding claim 24, "RFC 2893" discloses the network

element of claim 23.

"RFC 2893" does not expressly disclose wherein the second

processing mechanism is configured to apply a compression

process to the second packet, however, "RFC 2893" does disclose

wherein the first packet is processed by the second processing

mechanism as is known in the art with regards to the first

predetermined network layer protocol (page 9, section 3 "Common

Tunneling Techniques", "Router-to-Host"; page 17, section 3.6

"Decapsulation", paragraph beginning "After the IPv6 packet is

decapsulated...", specifically the text "After the IPv6 packet

is decapsulated, it is processed almost the same as any received

IPv6 packet").

"RFC 2507" discloses wherein a processing mechanism is configured to apply a compression process to the second packet (pages 4 and 5, section 1 "Introduction", the paragraph beginning "Headers that can be compressed include...", specifically the text "Headers that can be compressed includes TCP, UDP, IPv4, and IPv6 base and extension headers" and the paragraph beginning "This header compression scheme...", specifically the text "This header compression scheme is useful on first-hop or last-hop links as well as links in the middle of the network."; pages 14-16, section 4 "Grouping packets into packet streams", specifically page 15, the paragraph beginning "As long as the rules for when to...")

Claim 24 is rejected since the motivations regarding the obviousness of claim 6 also apply to claim 24.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following prior art teaches the state of the art in supporting network layer protocols on network elements:

US Patent 6 118 781 to Sekine;

US Patent 6 496 505 to La Porta et al;

US Patent 6 567 664 to Bergenwall et al;

US Patent 6 700 888 to Jonsson et al;

US Patent 6 742 036 to Das et al;

US Patent Application Publication 2001/0040895 to Templin;

US Patent Application Publication 2002/0012320 to Ogier et al;

US Patent Application Publication 2002/0062388 to Ogier et al;

US Patent Application Publication 2002/0080752 to Johansson et al;

US Patent Application Publication 2002/0194259 to Flykt et al;

US Patent Application Publication 2003/0018810 to Karagiannis et al;

Perkins, C. "Request for Comments (RFC) 2003: IP Encapsulation within IP", published by Network Working Group, October 1996, 14 pages;

Perkins, C. and Johnson, D. "Mobility Support in IPv6", released at the Proceedings of the Second Annual International Conference on Mobile Computing and Networking (MobiCom'96), 10-12 November 1996, Rye, New York, USA, 14 pages.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George C. Neurauter, Jr. whose telephone number is (571) 272-3918. The
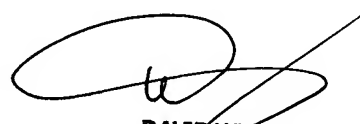
examiner can normally be reached on Monday through Friday from 9AM to 5:30PM Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wiley can be reached on (571) 272-3923. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gcn

DAVID WILEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100